

LISTING OF CLAIMS

The listing of claims provided below replaces all prior versions, and listings, of claims in the application.

5 1. (Currently Amended) A method for minimizing noise in an integrated circuit comprising:

choosing a net to be analyzed;

determining ~~if the~~ a total path length of conductive paths coupled to a driver within said the net exceed a maximum acceptable length for that given driver according to a minimum acceptable noise level for that given net, as determined by examination of a noise amplitude versus length of conduction path curve associated with the driver; and

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examining a noise amplitude versus length of conduction path curve associated with the driver to determine a noise level associated with the total path length of conductive paths coupled to the driver;

comparing the noise level associated with the total path length of conductive paths coupled to the driver to a maximum acceptable noise level;

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identifying the noise level associated with the total path length of conductive paths coupled to the driver as exceeding the maximum acceptable noise level;

examining the noise amplitude versus length of conduction path curve associated with the driver to determine a modified total path length of conductive paths coupled to the driver that corresponds to a modified noise level that is less than the maximum acceptable noise level; and

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modifying the net to reduce the total path length of conductive paths coupled to the driver to be less than or equal to the modified total path length of conductive paths

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~~inserting at least one buffer within said net at a position which is within the maximum acceptable length for conductive paths coupled to said driver, when the total path length~~

~~of conductive paths coupled to the driver exceeds a maximum acceptable length for the driver according to a minimum acceptable noise level for that given net, as determined by examination of the noise amplitude versus length of conduction path curve associated with the driver.~~

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2. (Currently Amended) A computer readable media containing program instructions that, when executed, exercise code for minimizing noise in an integrated circuit, the computer readable media comprising:

program instructions for choosing a net to be analyzed;

10 program instructions for determining if ~~the~~ a total path length of conductive paths coupled to a driver within ~~said the~~ the net ~~exceed a maximum acceptable length for that given driver according to a minimum acceptable noise level for that given net, as determined by examination of a noise amplitude versus length of conduction path curve associated with the driver; and~~

15 program instructions for examining a noise amplitude versus length of conduction path curve associated with the driver to determine a noise level associated with the total path length of conductive paths coupled to the driver;

program instructions for comparing the noise level associated with the total path length of conductive paths coupled to the driver to a maximum acceptable noise level;

20 program instructions for identifying the noise level associated with the total path length of conductive paths coupled to the driver as exceeding the maximum acceptable noise level;

program instructions for examining the noise amplitude versus length of conduction path curve associated with the driver to determine a modified total path length of conductive paths coupled to the driver that corresponds to a modified noise level that is less than the maximum acceptable noise level; and

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program instructions for modifying the net to reduce the total path length of
conductive paths coupled to the driver to be less than or equal to the modified total path
length of conductive paths ~~program instructions for inserting at least one buffer within~~
~~said net at a position which is within the maximum acceptable length for conductive~~
5 ~~paths coupled to said driver, when the total path length of conductive paths coupled to the~~
~~driver exceeds a maximum acceptable length for the driver according to a minimum~~
~~acceptable noise level for that given net, as determined by examination of the noise~~
~~amplitude versus length of conduction path curve associated with the driver.~~

10 3. (Currently Amended) A method for minimizing noise in an integrated
circuit comprising:

choosing a net to be analyzed;

15 determining ~~if the~~ a total path length of conductive paths coupled to a first driver
within the said net ~~exceed a maximum acceptable length for said first driver according to~~
~~a minimum acceptable noise level for said net, as determined by examination of a noise~~
~~amplitude versus length of conduction path curve associated with the driver;~~

examining a first noise amplitude versus length of conduction path curve
associated with the first driver to determine a first noise level associated with the total
path length of conductive paths;

20 comparing the first noise level associated with the total path length of conductive
paths to a maximum acceptable noise level;

identifying the first noise level as exceeding the maximum acceptable noise level;

examining a second noise amplitude versus length of conduction path curve
associated with a second driver to determine a second noise level associated with the total
25 path length of conductive paths;

comparing the second noise level associated with the total path length of
conductive paths to the maximum acceptable noise level;

identifying the second noise level as not exceeding the maximum acceptable noise
level; and

5 ~~determining if a second driver exists which provides a stronger signal output than
said first driver and which also is available to replace said first driver;~~

replacing the said first driver with the said second driver;

~~determining, once said first driver is replaced, if the total path length of
conductive paths coupled to said second driver within said net exceed a maximum
10 acceptable length for said second driver according to a minimum acceptable noise level
for said net, as determined by examination of a noise amplitude versus length of
conduction path curve associated with the second driver; and~~

~~inserting at least one buffer within said net at a position which is within the
maximum acceptable length for conductive paths coupled to said driver, when the total
15 path length of conductive paths coupled to the driver exceeds a maximum acceptable
length for the driver according to a minimum acceptable noise level for that given net, as
determined by examination of the noise amplitude versus length of conduction path curve
associated with the driver.~~

20 4. (Currently Amended) A computer readable media containing program
instructions that, when executed, exercise code for minimizing noise in an integrated
circuit, the computer readable media comprising:

program instructions for choosing a net to be analyzed;

25 program instructions for determining if a total path length of conductive paths
coupled to a first driver within the said net ~~exceed a maximum acceptable length for said
first driver according to a minimum acceptable noise level for said net, as determined by~~

~~examination of a noise amplitude versus length of conduction path curve associated with the second driver;~~

program instructions for examining a first noise amplitude versus length of conduction path curve associated with the first driver to determine a first noise level
5 associated with the total path length of conductive paths;

program instructions for comparing the first noise level associated with the total path length of conductive paths to a maximum acceptable noise level;

program instructions for identifying the first noise level as exceeding the maximum acceptable noise level;

10 program instructions for examining a second noise amplitude versus length of conduction path curve associated with a second driver to determine a second noise level
associated with the total path length of conductive paths;

program instructions for comparing the second noise level associated with the total path length of conductive paths to the maximum acceptable noise level;

15 program instructions for identifying the second noise level as not exceeding the maximum acceptable noise level; and

~~program instructions for determining if a second driver exists which provides a stronger signal output than said first driver and which also is available to replace said first driver;~~

20 program instructions for replacing the said first driver with the said second driver;

~~program instructions for determining, once said first driver is replaced, if the total path length of conductive paths coupled to said second driver within said net exceed a maximum acceptable length for said second driver according to a minimum acceptable noise level for said net, as determined by examination of a noise amplitude versus length~~
25 ~~of conduction path curve associated with the second driver; and~~

~~program instructions for inserting at least one buffer within said net at a position~~

~~which is within the maximum acceptable length for conductive paths coupled to said driver, when the total path length of conductive paths coupled to the driver exceeds a maximum acceptable length for the driver according to a minimum acceptable noise level for that given net, as determined by examination of the noise amplitude versus length of conduction path curve associated with the driver.~~

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2. (Currently Amended) The method for minimizing noise in an integrated circuit according to claim 1, wherein the curve defines a relationship between noise amplitude and conduction path length for a particular strength of the driver.

3. (Previously Added) The method for minimizing noise in an integrated circuit according to claim 5, wherein the curve defines a maximum allowable noise amplitude for the net.

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4. (Currently Amended) The method for minimizing noise in an integrated circuit according to claim 1, wherein modifying the net includes inserting ~~the insertion of~~ at least one buffer within the net ~~occurs at a position within the maximum acceptable length for conductive paths coupled to the driver, as determined by examination of the curve associated with the driver.~~

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5. (Currently Amended) The method for minimizing noise in an integrated circuit according to claim 7, wherein the curve associated with the driver defines a relationship between noise amplitude and conduction path length for a particular strength of the driver.

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6.-13. (Cancelled)

14. (Currently Amended) The method for minimizing noise in an integrated circuit according to claim 1, wherein determining the determination of the total path length of conductive paths coupled to the a driver within the ~~said~~ net includes a plurality
5 of intersecting conduction paths.

15. (Currently Amended) The method for minimizing noise in an integrated circuit according to claim 14, further comprising:

wherein identifying a timing issue associated with one or more conduction paths
10 within an insertion position of at least one buffer along the plurality of intersecting
conduction paths; and

is chosen to yield a most acceptable integrated circuit timing characteristic
choosing an insertion position of at least one buffer to be within one of the plurality of
intersecting conduction paths that is not identified as being associated with the timing
15 issue.

16. (Currently Amended) The method for minimizing noise in an integrated circuit according to claim 3, wherein the curve defines a relationship between noise amplitude and conduction path length for a particular strength of the driver.

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17. (Previously Added) The method for minimizing noise in an integrated circuit according to claim 16, wherein the curve defines a maximum allowable noise amplitude for the net.

25 18.-24. (Cancelled)

25. (Currently Amended) The method for minimizing noise in an integrated circuit according to claim 3, wherein determining the determination of the total path length of conductive paths coupled to the a driver within the ~~said~~ net includes a plurality of intersecting conduction paths.

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26. (Cancelled)

27. (Currently Amended) The computer readable media containing program instructions that, when executed, exercise code for minimizing noise in an integrated
10 circuit according to claim 2, wherein the curve defines a relationship between noise amplitude and conduction path length for a particular strength of the driver.

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28. (Previously Added) The computer readable media containing program instructions that, when executed, exercise code for minimizing noise in an integrated
15 circuit according to claim 27, wherein the curve defines a maximum allowable noise amplitude for the net.

29. (Currently Amended) The computer readable media containing program instructions that, when executed, exercise code for minimizing noise in an integrated
20 circuit according to claim 2, wherein the program instructions for modifying the net includes program instructions for inserting ~~insertion of~~ at least one buffer within the net ~~occurs at a position within the maximum acceptable length for conductive paths coupled to the driver, as determined by examination of the curve associated with the driver.~~

25 30. (Currently Amended) The computer readable media containing program instructions that, when executed, exercise code for minimizing noise in an integrated

circuit according to claim 29, wherein the curve associated with the driver defines a relationship between noise amplitude and conduction path length for a particular strength of the driver.

5 31.-35. (Cancelled)

36. (Currently Amended) The computer readable media containing program instructions that, when executed, exercise code for minimizing noise in an integrated circuit according to claim 2, wherein the ~~determination of the~~ total path length of
10 conductive paths coupled to the a driver within the ~~said~~ net includes a plurality of intersecting conduction paths.

37. (Currently Amended) The computer readable media containing program instructions that, when executed, exercise code for minimizing noise in an integrated
15 circuit according to claim 36, further comprising:

wherein program instructions for identifying a timing issue associated with one or more conduction paths within an insertion position of at least one buffer along the plurality of intersecting conduction paths; and

is chosen to yield a most acceptable integrated circuit timing characteristic
20 program instructions for choosing an insertion position of at least one buffer to be within one of the plurality of intersecting conduction paths that is not identified as being associated with the timing issue.

38. (Currently Amended) The computer readable media containing program
25 instructions that, when executed, exercise code for minimizing noise in an integrated circuit according to claim 4, wherein the curve defines a relationship between noise

amplitude and conduction path length for a particular strength of the driver.

39. (Previously Added) The computer readable media containing program instructions that, when executed, exercise code for minimizing noise in an integrated circuit according to claim 38, wherein the curve defines a maximum allowable noise amplitude for the net.

40.-46. (Cancelled)

10 47. (Currently Amended) The computer readable media containing program instructions that, when executed, exercise code for minimizing noise in an integrated circuit according to claim 4, wherein ~~the determination of~~ the total path length of conductive paths coupled to the a driver within the ~~said~~ net includes a plurality of intersecting conduction paths.

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48. (Cancelled)